Bruhat Bengaluru Mahanagara Palike

Office of Executive Engineer Road Infrastructure Dasarahalli Division

Bill of Quantites

Name of Work: Improvements to Roads, Drains & Footpath and Asphalting including Milling whole surface of Selected Arterial, Sub-Arterial and other important roads in Dasarahalli Assembly Constituency (Package No.DAS-1) of RI-Dasarahalli Division

Sl no	Description of Work	Unit	Quantity as per Estimate
	CIVIL WORK PART- A		
1	Removing and Refixing of drain covering slabs (B.S Slab or RCC Slab 10cms) and Pointing in CM (1:3) as directed by the Engineer in charge of the work (excluding GST and Area Loading Charges).(Approved Rate Analysis copy enclosed)	Sqm	18398.76
2	Removing and resetting of precast kerb stones fixed with CM 1:3 fixed and finished in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra). (P.No.95, I.No.10.17, Vol.3, SR of 2023-24)	Rmt	12136.10
3	Dismantling of existing structures like culverts, bridges, retaining walls and other structure comprising of masonry, cement concrete, wood work, steel work, including T&P and scaffolding wherever necessary, sorting the dismantled material, disposal of unserviceable material and stacking the serviceable material with all lifts and lead (Cement Concrete Grade M-15 & M-20).. (P.No.10, I.No.2.7.b, Vol.3, SR of 2023-24)	Cum	119.97
4	Earth work excavation by manual means for drains,canals, waste weir, draft, approach channels, key trenches, foundation of bridges and such simillar works in all kinds of soils , as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, removal of stumps and other deleterious matter, excavated surface leveled and sides neatly dressed disposing off the excavated stuff or sorting & stacking the selected stuff for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, tools & other appurtenaces required to complete the work.(P.No.5,I.No.1.4.1,Vol.1, SR of 2023-24)	Cum	6780.00
5	Earth work excavation for Foundation by mechanical means for all works & depth upto 3m, as per drawing and technical specifications, including setting out, shoring , strutting, barricading, caution lights, including dressing of excavated surfaces, disposing off or levelling the excavated earth or sorting & stacking the selected earth for reuse in a radius of 50 m and lift upto 1.5m including cost of labour, tools, usage of machinery & other appurtenaces required to complete the work. In all kinds of soils upto 3 m depth. (P.No.8,I.No.1.14.1, Vol.1, SR of 2023-24)	Cum	3855.45
6	Loading and Unloading of Stone Boulder/Stone aggregates/Sand/Kankar /Moorum. (Tipper 14 m3).(P.No.5, I.No.1.1.c, Vol-3)	Cum	6899.97
7	Cost of Haulage Excluding Loading and Unloading: Taking output 25 t load and lead 10 km = 250 t.km (Average Weight of Earth 10 Tonne/Km For (10x25x7)/14 (P.No.5, I.No.1.4(i)C, Vol-3)	T.km	10755.42
8	Providing and laying in position plain cement concrete for levelling course for all works in foundation. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed, laid in layers not exceeding 150 mm thickness, well compacted using plate vibrators, including all lead & lifts, cost of all materials of quality, labour, Usage charges of machineries, curing, and all the other appurtenances required to complete the work as per technical specifications. (The cost of steel reinforcement & formwork shall be paid separately) Mix 1:3:6 (M10) Using 40 mm and down size graded crushed coarse aggregates..(Vol-I P.No-15 I.No-2.1.3 CSR-2023-24)	Cum	397.15

Sl no	Description of Work	Unit	Quantity as per Estimate
9	Providing and laying in Reinforced Cement Concrete for all Foundation works. The granite/trap/basalt crushed graded coarse aggregates and fine aggregates as per relevant IS Codes machine mixed with super plasticizers laid in finished layers, well compacted using needle vibrators, including all lead & lifts, cost of all materials, quality confirming to the requirements of relevant IS codes, labour, Usage charges of machinery, curing and all the other appurtenances required to complete the work as per technical specifications. M20 Design Mix Using 20 mm nominal size graded crushed coarse aggregates. (Vol-I P.No-15 I.No-2.2.1 CSR-2023-24)	Cum	1236.67
10	Supplying, fitting and placing TMT FE 550 / 550D Steel Reinforcement including cost of all materials, machinery, labour, cleaning, straightening,cutting, bending, hooking, laping/welding joints, tying with binding wire / soft annealed steel wire and other ancilary operations complete as per drawing and technical specification. (Vol-I P.No-18 I.No-2.11h SR of 2023-24)	Tonne	77.55
11	Providing and constructing load bearing wall with Solid Concrete blocks of size 400x150x200mm having block density more than 1800kg/m3 and minimum compressive strength of 4.00 N/mm2 conforming to IS 2185 (Part - I) - 2005 and constructed with CM 1:4 as per IS 2572:2005 including cost of all materials, labour, scaffolding and curing, usage charges of machinery etc complete as per specifications.(P.No.17,I.No.6.33, Vol.2, SR of 2023-24)	Sqm	129.60
12	Providing 20 mm cement plaster of mix :1:6 (1 cement: 6 fine sand) to brick/stone masonary including rounding off corners wherever required smooth rendering, providing and removing scaffolding, including cost of materials, labour, curing complete as per specifications and as per directions of Engineer-in-charge.(P.No.41, I.No.8.3.2,Vol.2, SR of 2023-24)	Sqm	259.20
13	Providing and laying 100mm thick pre-cast cover slabs over Road side drains / utility ducts / Rain water harvesting pit of width not exceeding 1000 mm using M20 concrete reinforced with TMT bars Fe 550 @ 6kg/m2, slabs jointed in CM 1:3 proportion and nicely finished Including providing holes in the Cover slabs wherever necessary for easy drainage of surface water including of labour, materials, scaffolding, usage of machinery, curing, lead and lift charges etc, Complete. .. (V-2,P.No.152, I.No.17.14of PW, P&IWTD S.R 2023-24)	Sqm	11285.33
14	Providing and fixing Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required. In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works including cost of materials, labour, usage charges of machinery complete as per specifications and as per directions of the Engineer-in-charge.(P.No.84,I.No.11.25.2,Vol.2, SR of 2023-24)	Kgs	112.50
15	Supplying and installation of COMPOSITE FIBER REINFORCED POLYMER Water Gully Grating with bottom chamber of appropriate size of 450 x 450 mm and a load bearing capacity of 40MT (D400 Load capacity) of approved bond confirming to BSEN-124:1994/IS 1726. Gully grating should have minimum 30% of water entrance area that of clear opening of chamber. It shall give top abrasion resistant layer of decorative dark grey finish. The cover should have a beam design at the bottom with thickness in the center of a minimum of 125MM to 150MM at the center. The chamber should have one circular cut of 200mm dia. It shall also confirm “Permanent set” criterion as per BSEN-124/IS 1726. The rate is inclusive of Earthwork of 750mmx750mmx600mm pit, which should be placed over 100mm thick bed concrete, reinforced with TMT bars Fe 550 of not less than 15 kg and Concreting using M20 grade concrete of 150mm thick till the depth of chamber. Product should be tested in test lab for load capacity and permanent set with cost of all materials, transportation, loading & unloading charges etc., complete as per specifications and directions of Engineer-Incharge of the work.(including Area Weightage and Excluding GST)	Nos	116.00

Sl no	Description of Work	Unit	Quantity as per Estimate
16	Supplying and fixing M15 grade precast cement concrete Kerb stones for Roadway, Sidewalls and gutters fixed with CM 1:3 fixed and finsihed in line as per direction of Engineer in charge. (The cost of PCC shall be paid extra) 600 x 300 x 150 mm Kerb Stone. (PW,P& IWTD SR 2023-24 Vol-3, Pg No 74 Item No.8.42.3)	Rmt	7257.40
17	Applying priming coats with primer of approved brand and manufacture, having low VOC (Volatile Organic Compound) content. With water thinnable cement primer on wall surface having VOC content less than 50 grams/litre as per specifications and as per directions of Engineer in charge. (P.No.51, I.No.8.55.2, Vol.2, SR of 2023-24)	Sqm	7757.40
18	Painting two coats after filling the surface with synthetic enamel paint in all shades on new plastered concrete surfaces.(P.No.66,I.No.8.10,Vol.3)	Sqm	7757.40
19	Providing and fixing 250mm thick precast RCC Covering slab using reinforced cement concrete M-20 mix with stone aggrigatte 20mm and down size including centring, shuttering, reinforcement and bad bending machine mixed concrete laid in layers complete as per specifications	Sqm	209.50
20	Removing & Resetting existing Heavy Duty Cobble/Interlocking stones/Pavers of thickness 60/75/80/100mm using Cement and 40mm thick sand bed (average thickness) and compacting with plate vibrator to achieve final desired compaction & setting of paver to its final level , including cost of materials, labour and usage charges of machinery complete as per specifications. (The cost of new paver/stones required shall be added separately)	Sqm	400.00
	ROAD WORK PART- B		
1	Earth work in surface excavation by mechanical means for lowering & leveling the ground for all works other than foundation in all kinds of soils & upto depth not exceeding 300mm as per drawing and technical specifications, including setting out, shoring, strutting, barricading, caution lights, removal of stumps and other deleterious matter including dressing of excavated surfaces, disposing off or levelling the excavated earth or sorting & stacking the selected earth for reuse in a radius of 50 m and lift upto 1.5 m including cost of labour, tools, usage of machinery & other appurtenances required to complete the work. In all kinds of soils upto 300 mm depth.(P.No.8, I.No.1.12,Vol.1, SR of 2023-24)	cum	834.41
2	Providing,laying, spreading and compacting graded stone aggregates to wet mix macadam specification including premixing the Material with water at OMC in mechanical mix plant carriage of mixed Material by tipper to site, laying in uniform layers with paver/grader in sub-base/base course on well prepared surface and compacting with vibratory roller to achieve the desired density.(P.No.26,I.No.4.17, Vol.3)	cum	689.22
3	Providing and applying primer coat with SS1 grade Bitumen Emulsion on prepared surface of granular base including cleaning of road surface and spraying primer at the rate of 0.90 kg per m2 using mechanical means.(P.No.31,I.No.5.1, Vol.3)	Sqm	32856.22
4	Providing and laying Dense Graded Bituminous Macadam with 40/60 TPH capacity HMP using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 4.5 per cent by weight of total mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MoRTH specification clause No. 505 complete in all respects (Dense Graded Bituminous Macadam grading - II for traffic <20 MSA) (P.No.35,I.No.5.12.C,Vol.3)	cum	1639.51
5	Milling of existing Bituminous surface to a specified depth up to 40mm using Milling machine including disposal of removed material.(P.No.51, I.No.6.7, Vol-3, PWD SR of 2023-24)	Sqm	119505.50
6	Providing and applying tack coat with RS1 Bituminous Emulsion usingemulsion pressure distributor at the rate of 0.20 kg/m2 on the prepared bituminous surface cleaned with mechanical broom (P.No.31,I.No.5.3, Vol.3)	Sqm	142775.00

Sl no	Description of Work	Unit	Quantity as per Estimate
7	Providing and laying Micro Surfacing Course Type III for traffic <1500CVPD & Upto 4500CVPD with 8mm thickness as per IRC SP 81:2008 on existing structural sound & distressed pavement surface. (It is to be applied over an existing pavement surface which is structurally sound, but the surface is showing signs of premature ageing, aggregate loss, high degree of polishing, oxidation / hungry surface) comprising of aggregates confirming to section 514 of MoRTH Specification. The Modified Bitumen Emulsion @ 10%, Filler cement @ 2%, Additive @ 0.5% and water as per requirement, aggregates as per Table 500-27. All these ingredients are mixed with required quantity of water to prepare semi fluid mass. The mix shall be spread mechanically using Microsurfacing Paver. The Cost includes cleaning of surface with Air compresser, laying and compacting to provide even riding surface and shall be rolling by Pneumatic Tyre Roller and ensure excessive movement does not occur, including cost of all materials, labour, usage charges of machinery, lead, lifts, loading, unloading, stacking, transporting, etc complete as per technical specification.(P.No.44, I.No.5.35b, Vol-3)	Sqm	1725.00
8	Providing and laying Bituminous Concrete with 40/60 TPH capacity hot mix plant using crushed aggregates of specified grading, premixed with bituminous binder VG-30, @ 5.4 per cent of mix and filler, transporting the hot mix to work site, laying with mechanical paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 507 complete in allrespects. (Bituminous Concrete Grading II for traffic <20 MSA) (P.No.38,I.No.5.16.C,Vol.3)	cum	5728.00
9	Road Marking with Hot Applied Thermoplastic compound with Reflectrising Glass beads on Bituminous surface. Providing and laying of Hot applied thermoplastic compound 2.5mm thick including reflectorising glass beads at 250gm/sqm area, thickness of 2.5mm is exclusive of surface applied glass beads as per IRC:35,. The finished surface to be level, uniform and pre firm streaks and holes.(P.No.67, I.No.8.15,Vol.3)	Sqm	3325.00
10	Supplying and Fixing of Molded Shank Raised Pavement Markers / Cat's Eye made of polycarbonate and ABS moulded body and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face and shall support a load of 16000 kg tested in accordance to ASTM D 4280 Type H and complying to Specifications of Category A of MORTH Circular No RW/NH/33023/10-97 DO III Dt 11.06. 1997. The height, width and length shall not exceed 50 mm, 100 mm and 102 +/- 2 mm and with minimum reflective area of 13 cm2 on each side and the slope to the base shall be 35 +/- 5 degree. The strength of detachment of the integrated cylindrical shanks, (of diameter not less than 19 +/- 2 mm and height not less than 30+/- 2 mm) from the body is to be a minimum value of 500 Kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive as per manufacturer's recommendation and complete as directed by the engineer.The contractor shall submit a two year warranty for satisfactory field performance including stipulated retro-reflectance of the reflecting panel, to the Engineerr(P.No.74, I.No.8.43,Vol.3)	Each	6070.00

Sl no	Description of Work	Unit	Quantity as per Estimate
11	Supplying & fixing of Solar Raised Pavement Markers made of polycarbonate molded body with circular shape, solar powered, LED self illumination in active mode, 360 degree illumination and reflective panels with micro prismatic lens capable of providing total internal reflection of the light entering the lens face in passive mode. The marker shall support a load of 20000 kg tested in accordance to ASTM D 4280. The marker should be resistant to dust and water ingress according to IP 65 standards and should withstand tempertures in the range of 0 C to 70 C. Color of lighting could be provided in red or yellow (amber) as per requirement and typicl frequency of blinking is 1 Hz. There should be current losses of less than 20 microamperes at 2.4 V in sleepcharging mode to enhance the life of the marker and a full charge should provide for a minimum autonomy of 50 hours. The height, width and length of the marker shall notbe less than 10 mm x 100 mm x 100 mm. Also, the surfacediameter of the marker shall not be less than 100 mm respectively. The weight of the marker shall not exceed 0.5 kg. Fixing will be by drilling holes on the road for the shanks to go inside, without nails and using epoxy resin based adhesive and complete as directed by the Engineer(P.No.71, Sl.No.8.32,Vol.3)	Each	40.00